

AMENDMENTS TO THE CLAIMS:

Please cancel claims 2, 4, 6, 8, 10, and 12 and amend the claims as follows:

1. (Currently Amended) A steel for use in a high strength pinion shaft comprising:
0.45wt% - 0.55wt% C;
~~0.10wt% - 0.50wt% Si;~~ 0.21wt%-0.45wt% Si;
0.50wt% - 1.20wt% Mn;
0.025wt% or less P;
0.025wt% or less S;
0.15wt% - 0.25wt% Mo;
0.0005wt% - 0.005wt% B;
0.005wt% - 0.010wt% Ti;
0.015wt% or less N; and
a balance comprising Fe and impurities,
wherein the steel comprises a 3-phase texture of ferrite + pearlite + bainite,
wherein $0.80 \leq Ceq \leq 0.95$, where $Ceq = C + 0.07 \times Si + 0.16 \times Mn + 0.20 \times Cr + 0.72 \times Mo$,
wherein $f \text{ value} \leq 1.0$, where $f \text{ value} = \frac{1.78}{2.78} - 3.2 \times C + 0.05 \times Si - 0.60 \times Mn -$
 $0.55 \times Cu - 0.80 \times Ni - 0.75 \times Cr$, and
wherein the steel is devoid of Cr, Cu, Ni and Al.
2. (Canceled)
3. (Previously Presented) A steel for use in a high strength pinion shaft according to claim 1, further comprising one or more of 0.20wt% or less Nb, 0.20wt% or less Ta, 0.10wt% or less Zr and 0.10wt% or less Al instead of a portion of said Fe.

4. (Canceled)

5. (Currently Amended) A steel for use in a high strength pinion shaft comprising:

0.45wt% - 0.55wt% C;

~~0.10wt% - 0.50wt% Si;~~ 0.21wt%-0.45wt% Si;

0.50wt% - 1.20wt% Mn;

0.025wt% or less P;

0.025wt% or less S;

0.15wt% - 0.25wt% Mo;

0.0005wt% - 0.005wt% B;

0.005wt% - 0.010wt% Ti;

0.015wt% or less N; and

a balance comprising Fe and impurities,

wherein the steel, having been hot rolled, comprises a 3-phase texture of ferrite + pearlite + bainite,

wherein a ferrite area ratio is 40% or less,

wherein a maximum pearlite block size is 100 μm or less in a circle-equivalent diameter,

wherein a hardness after hot rolling is 24 to 30 HRC,

wherein a surface hardness after high frequency hardening is 650 HV or higher,

wherein an old austenite crystal grain size in a hardened layer is 8 or more in view of grain size number,

wherein $0.80 \leq C_{eq} \leq 0.95$, where $C_{eq} = C + 0.07 \times Si + 0.16 \times Mn + 0.20 \times Cr + 0.72 \times Mo$,

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wherein $f \text{ value} \leq 1.0$, where $f \text{ value} = \cancel{+78} \underline{2.78} - 3.2 \times C + 0.05 \times Si - 0.60 \times Mn -$
 $0.55 \times Cu - 0.80 \times Ni - 0.75 \times Cr$, and

wherein the steel is devoid of Cr, Cu, Ni and Al.

6. (Canceled).

7. (Previously Presented) A steel for use in a high strength pinion shaft according to claim 5, further comprising one or more of 0.20wt% or less Nb, 0.20wt% or less Ta, 0.10wt% or less Zr and 0.10wt% or less Al instead of a portion of said Fe.

8. (Canceled)

9. (Currently Amended) A method of manufacturing a steel for use in a high strength pinion shaft in which a steel comprising:

0.45wt% - 0.55wt% C;

~~0.10wt% - 0.50wt% Si;~~ 0.21wt%-0.45wt% Si

0.50wt% - 1.20wt% Mn;

0.025wt% or less P;

0.025wt% or less S;

0.15wt% - 0.25wt% Mo;

0.0005wt% - 0.005wt% B;

0.005wt% - 0.010wt% Ti;

0.015wt% or less N; and

a balance comprising Fe and impurities, is fabricated or worked under a draft ratio at

an area reduction of 10% or more, and at a temperature of 850°C or lower,

wherein $0.80 \leq C_{eq} \leq 0.95$, where $C_{eq} = C + 0.07 \times Si + 0.16 \times Mn + 0.20 \times Cr + 0.72 \times Mo$,

wherein $f \text{ value} \leq 1.0$, where $T_{Tr} = 2.78 - 3.2 \times C + 0.05 \times Si - 0.60 \times Mn - 0.55 \times Cu -$

$0.80 \times Ni - 0.75 \times Cr$,

said method comprising hot rolling said steel to obtain a steel comprising a 3-phase texture of ferrite + pearlite + bainite, and

wherein the steel is devoid of Cr, Cu, Ni and Al.

10. (Canceled)

11. (Previously Presented) A method of manufacturing a steel for use in a high strength pinion shaft according to claim 9, further comprising one or more of 0.20wt% or less Nb, 0.20wt% or less Ta, 0.10wt% or less Zr and 0.10wt% or less Al instead of a portion of said Fe.

12. (Canceled)

13. (Previously Presented) A steel for use in a high strength pinion shaft according to claim 1, wherein a ferrite ratio of said steel comprises 40% or less.

14. (Previously Presented) A steel for use in a high strength pinion shaft according to claim 1, wherein a hardness of said steel after hot rolling comprises a range of 24 HRC to 30 HRC.

15. (Previously Presented) A steel for use in a high strength pinion shaft according to

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claim 1, wherein a surface hardness of said steel comprises 650 HV or more.

16. (Previously Presented) A steel for use in a high strength pinion shaft according to claim 1, wherein said steel comprises an old austenite crystal grain size of 8 or more.

17. (Previously Presented) A method of manufacturing a steel for use in a high strength pinion shaft according to claim 9, wherein said steel is fabricated or worked under a temperature in a range of 700°C to 850°C.

18. (Previously Presented) A steel for use in a high strength pinion shaft according to claim 1, wherein a torsional strength of said steel comprises 1670 Mpa to 1800 Mpa.

19. (Previously Presented) A steel for use in a high strength pinion shaft according to claim 1, wherein a wear loss of said steel comprises 0.002g to 0.004g.

20. (Canceled)

21. (Canceled)